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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,449	03/27/2001	Ming-Dou Ker	JCLA4280-D2	1595

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EXAMINER

CHAMBLISS, ALONZO

ART UNIT PAPER NUMBER

2827

DATE MAILED: 06/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/818,449

Applicant(s)

KER ET AL.

Examiner

Alonzo Chambliss

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/3/02(amendment B).
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 03 April 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- ☐ Interview Summary (PTO-413) Paper No(s). _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

DETAILED ACTION

1. Amendment B filed on 4/3/02 has been fully considered and made of record as Paper No. 6.

Response to Arguments

2. Applicant's arguments filed 4/3/02 in Paper No. 6 have been fully considered but they are not persuasive.

Applicant alleges that the Oku fails to disclose a bonding pad comprises a plurality of via plugs that are placed in an alternating manner through the dielectric layers to electrically connect the different metal layers in the stack. This argument is respectfully deemed to be unpersuasive because Oku teaches a bonding pad 11a comprises a plurality of via plugs 44, 46 that are placed in an alternating manner (i.e. in different levels or points along an axial line) through the dielectric layers 19, 21, 73 to electrically connect the different metal layers 29b, 71b in the stack (see col. 4 lines 9-15; Fig. 5).

Applicant alleges that the Oku fails to disclose a concentric circle arrangement of the metal layers. This argument is respectfully deemed to be unpersuasive because Oku teaches metal layers 29b, 71b having an arrangement (see Fig. 5). The changing shape of the structure is an obvious matter of design choice within one of ordinary skill in the art and the difference in shape of the structure does not make the device operate differently. One skilled in the art would readily recognize to use metal layers having a concentric circle arrangement with Oku, since the concentric circle would not make the

device operate differently and any shape can be incorporated into the device without increasing the area of the bonding pad.

Applicant alleges that the Yuan fails to disclose a bonding pad being aligned with the doped region as a diffusion region in the substrate. This argument is respectfully deemed to be unpersuasive because Yuan discloses a bonding pad 22 having a metal layer 26 over the substrate 27 and aligned with a doped region 6 formed in the well as a diffusion region. The doped region 6 is aligned with the bonding pad, since it is underneath the bonding pad and not located in another location, which is not under the bonding pad. Yuan discloses ions in the doped region 6 are opposite to those in the well 33 (col. 3 lines 39-67 and col. 4 lines 1-22; Fig 4).

Drawings

3. The corrected or substitute drawings were received on 4/3/02 as Paper No. 5. These drawings are approved by the examiner.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 26 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Oku et al. (U.S. 5,394,013).

With respect to Claim 26, Oku teaches a substrate 5 and a stacked of metal layers 29b, 71b positioned on the substrate 5, wherein the stacked metal layers 29a, 71a further comprise a plurality of metal layers 29b, 71b and a plurality of dielectric layers 19, 21, 73. the dielectric layers 19, 21, 73 alternate between the stacked metal layers 29b, 71b which are coupled by a plurality of via plugs 44, 46 in the dielectric layers 19, 21, 73. The via plugs 44, 46 are placed in an alternating manner (i.e. in different levels or points along an axial line) with respect to one another through the stack (see col. 4 lines 9-15; Fig. 5). The uppermost metal layer 11a is positioned on the stacked metal layers 29b, 71b an electrically connected to the stack 29b, 71b, wherein an area of each metal layer 29b, 71b in the stack is smaller than that of the uppermost metal layer 11a. The passivation layer 13 has a bonding pad opening positioned on the upper most metal layer 11a, wherein the bonding pad opening exposes a portion of the uppermost metal layer 11a. The device 41 is located on the substrate 5 under the bonding pad 11 (see Fig. 5).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 27-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oku (U.S. 5,394,013) as applied to claim 26 above, and further in view of Yuan (U.S. 5,838,043).

With respect to Claim 27, 28, 33, and 40, Oku discloses metal layers 29b, 71b having an arrangement (see Fig. 5). Also, the changing shape of the structure is an obvious matter of design choice within one of ordinary skill in the art and the difference in shape of the structure does not make the device operate differently. Therefore, one skilled in the art would readily recognize to use metal layers having a concentric circle arrangement with Oku, since the concentric circle would not make the device operate differently and any shape can be incorporated into the device without increasing the area of the bonding pad.

With respect to Claims 29, 32, and 37, Oku discloses an uppermost layer 11a positioned on the stacked metal layers 29b, 71b, wherein an area of each metal layer in the stacked metal layers 29b, 71b is smaller than that of the uppermost layer 11a (see Fig. 5).

With respect to claims 36 and 39, Oku discloses a device 41 formed between the source region 35 and the drain region to form a field effect transistor, which has a passive and active device that is under the bonding pad (see col. 8 lines 56-58; Fig. 5).

Oku does not teach a substrate having a well with a doped region as a diffusion region formed in a well. A bonding pad over the substrate and aligned with the doped region, wherein the bonding pad comprises a stacked metal layer and an uppermost metal layer. Ions doped in the doped region, which is opposite to those in the well. However, with respect to Claims 30, 36, 38, 39, and 41, Yuan discloses a substrate 27 having a well 33 with a doped region as a diffusion region 6 formed in the well 33. A bonding pad 22 having a metal layer 26 over the substrate 27 and aligned with the doped region formed in the well as a diffusion region. The doped region 6 is aligned with the bonding pad, since it is underneath the bonding pad and not located in another location, which is not under the bonding pad. Yuan discloses ions in the doped region 6 are opposite to those in the well 33 (col. 3 lines 39-67 and col. 4 lines 1-22; Fig 4). Therefore, it would have been obvious to incorporate the substrate having a well with a doped region as diffusion region formed in the well with Oku, since the substrate would produce a low capacitance semiconductor device which is faster than conventional protection circuits and reduce the space required by protection circuits as taught by Yuan.

With respect to Claims 34 and 35, Oku discloses metal 29a aligned with the adjacent metal layer 71a in the stack and a metal layer 29b that is not aligned with the metal layer 71b (see Fig. 5).

The prior art made of record and not relied upon is cited primarily to show the product of the instant invention.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (703) 306-9143. The fax phone number for this Group is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956.

Application/Control Number: 09/818,449
Art Unit: 2827

AC

AC/June 14, 2002



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